Docket No.: SON-2875
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:
Kenji YAMAMOTO et al.

Application No.: 10/501,229 Confirmation No.: 3803

Filed: July 12, 2004 Art Unit: 2871

For: LIQUID CRYSTAL DEVICE AND MANUFACTURING METHOD THEREOF Examiner: J. A. Dudek

## APPELLANT'S BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is an Appeal Brief under 37 C.F.R. §41.37 appealing the final decision of the Examiner dated April 6, 2006. Each of the topics required by 37 C.F.R. §41.37 is presented herewith and is labeled appropriately.

This brief is in furtherance of the Final Office Action on April 6, 2006.

A Notice of Appeal was filed in this case on July 6, 2006.

# TRANSMITTAL OF APPEAL BRIEF

Docket No.
SON-2875

In re Application of: Kenji YAMAMOTO et al.

| Application No. | Filing Date | Examiner | Group Art Unit |
|---|---|---|---|
| 10/501,229-Conf. #3803 | July 12, 2004 | J. A. Dudek | 2871 |

Invention: LIQUID CRYSTAL DEVICE AND MANUFACTURING METHOD THEREOF

**TO THE COMMISSIONER OF PATENTS:**

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed: July 6, 2006 .

The fee for filing this Appeal Brief is $ 500.00 .

[X] Large Entity [ ] Small Entity

[ ] A petition for extension of time is also enclosed.

The fee for the extension of time is _____ .

[ ] A check in the amount of _____ is enclosed.

[X] Charge the amount of the fee to Deposit Account No. 18-0013 .
This sheet is submitted in duplicate.

[ ] Payment by credit card. Form PTO-2038 is attached.

[X] The Director is hereby authorized to charge any additional fees that may be required or credit any overpayment to Deposit Account No. 18-0013 .
This sheet is submitted in duplicate.

Dated: September 6, 2006

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE


*Effective on 12/08/2004.*
*Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).*

# FEE TRANSMITTAL
## For FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

**TOTAL AMOUNT OF PAYMENT** ($) 500.00

| Complete if Known | |
|---|---|
| Application Number | 10/501,229-Conf. #3803 |
| Filing Date | July 12, 2004 |
| First Named Inventor | Kenji Yamamoto |
| Examiner Name | J. A. Dudek |
| Art Unit | 2871 |
| Attorney Docket No. | SON-2875 |

**METHOD OF PAYMENT** (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☒ Deposit Account Deposit Account Number: 18-0013 Deposit Account Name: Rader, Fishman & Grauer PLLC

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, **except for the filing fee**

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17 ☒ Credit any overpayments

**FEE CALCULATION**

**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

| | FILING FEES | | SEARCH FEES | | EXAMINATION FEES | | |
|---|---|---|---|---|---|---|---|
| **Application Type** | **Fee ($)** | **Small Entity Fee ($)** | **Fee ($)** | **Small Entity Fee ($)** | **Fee ($)** | **Small Entity Fee ($)** | **Fees Paid ($)** |
| Utility | 300 | 150 | 500 | 250 | 200 | 100 | |
| Design | 200 | 100 | 100 | 50 | 130 | 65 | |
| Plant | 200 | 100 | 300 | 150 | 160 | 80 | |
| Reissue | 300 | 150 | 500 | 250 | 600 | 300 | |
| Provisional | 200 | 100 | 0 | 0 | 0 | 0 | |

**2. EXCESS CLAIM FEES**

| Fee Description | Fee ($) | Small Entity Fee ($) |
|---|---|---|
| Each claim over 20 (including Reissues) | 50 | 25 |
| Each independent claim over 3 (including Reissues) | 200 | 100 |
| Multiple dependent claims | 360 | 180 |

| Total Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| _____ - = | _____ x | _____ = | _____ |

HP = highest number of total claims paid for, if greater than 20.

| Indep. Claims | Extra Claims | Fee ($) | Fee Paid ($) |
|---|---|---|---|
| _____ - = | _____ x | _____ = | _____ |

HP = highest number of independent claims paid for, if greater than 3.

| Multiple Dependent Claims | |
|---|---|
| **Fee ($)** | **Fee Paid ($)** |
| _____ | _____ |
| _____ | _____ |

**3. APPLICATION SIZE FEE**

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

| Total Sheets | Extra Sheets | Number of each additional 50 or fraction thereof | Fee ($) | Fee Paid ($) |
|---|---|---|---|---|
| _____ - 100 = | _____ /50 | _____ (round up to a whole number) x | _____ = | _____ |

**4. OTHER FEE(S)** **Fees Paid ($)**

Non-English Specification, $130 fee (no small entity discount)

Other (e.g., late filing surcharge): 1402 Filing a brief in support of an appeal 500.00

**SUBMITTED BY**

| | | | | | |
|---|---|---|---|---|---|
| Signature | | Registration No. (Attorney/Agent) | 24,104 | Telephone | (202) 955-3750 |
| Name (Print/Type) | Ronald P. Kananen | | | Date | September 6, 2006 |

## I. REAL PARTY IN INTEREST

Sony Corporation of Tokyo, Japan ("Sony") is the real party in interest of the present application. An assignment of all rights in the present application to Sony was executed by the inventor and recorded by the U.S. Patent and Trademark Office at **reel 016078, frame 0272.**

## II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF CLAIMS

Within the Final Office Action of April 6, 2006:

- Page 2 of the Final Office Action indicates a rejection of claims 1-10 under 35 U.S.C. §103 as allegedly being unpatentable over U.S. Patent No. 5,416,757 to Luecke et al. (Luecke) in view of U.S. Patent No. 4,850,681 to Yamanobe et al. (Yamanobe).

Thus, the status of the claims is as follows:

Claims 1-10 (Rejected).

No claims are indicated within the Final Office Action to contain allowable subject matter.

Accordingly, Appellant hereby appeals the final rejection of claims 1-10 which are presented in the Claims Appendix.

## IV. STATUS OF AMENDMENTS

Subsequent to the final rejection of April 6, 2006, an Amendment After Final Action (37 CFR Section 1.116) has been filed on June 2, 2006.

The Advisory Action of June 23, 2006 fails to indicate entry of the Amendment After Final Rejection Under 37 C.F.R. § 1.116 of June 2, 2006.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

The following description is provided for illustrative purposes and is not intended to limit the scope of the invention.

The present invention relates to a liquid crystal device which can be used in an optical recording/reproducing apparatus such as an optical disc system, a magneto-optical disc system or an optical card system, as well as to a manufacturing method for the liquid crystal device.

Shown within the figures and described within the specification is:

a liquid crystal layer (120) which controls a phase distribution of transmitted light;

a pair of substrates (100, 110) which sandwich and seal said liquid crystal layer (120) therebetween; and

a pair of electrodes (130, 140) which are respectively disposed at inner sides of said substrates (100, 110) to apply a predetermined voltage to said liquid crystal layer (120), and characterized in that:

an uneven portion (111) for giving a distribution to a thickness of said liquid crystal layer (120) is provided inwardly of said substrates (Substitute specification at page 13, lines 12-17), and

said pair of electrodes (130, 140) are formed in planar shapes parallel to each other, wherein

said uneven portion (111) is an uneven shape, said uneven shape corresponding to a desired phase distribution; and

said uneven shape of said uneven portion (111) corresponds to the spherical aberration and the comma aberration of a wavefront (Figures 6A, 6B).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The issues presented for consideration in this appeal are as follows:

Whether the Examiner erred in rejecting claims 1-10 under 35 U.S.C. §103 as allegedly being unpatentable over U.S. Patent No. 5,416,757 to Luecke et al. (Luecke) in view of U.S. Patent No. 4,850,681 to Yamanobe et al. (Yamanobe).

This issue will be discussed hereinbelow.

## VII. ARGUMENT

In the Office Action of April 6, 2006:

The Examiner erred in rejecting claims 1-10 under 35 U.S.C. §103 as allegedly being unpatentable over U.S. Patent No. 5,416,757 to Luecke et al. (Luecke) in view of U.S. Patent No. 4,850,681 to Yamanobe et al. (Yamanobe).

For at least the following reasons, Appellant submits that this rejection is both technically and legally unsound and should therefore be reversed.

For purposes of this appeal brief only, and without conceding the teachings of any prior art reference, the claims have been grouped as indicated below.

**Claim Groups:**

Regarding the final rejection of claims 1-10:

Claims 1-10 stand or fall together.

***The Examiner erred in rejecting claims 1-10 under 35 U.S.C. §103 as allegedly being unpatentable over U.S. Patent No. 5,416,757 to Luecke et al. (Luecke) in view of U.S. Patent No. 4,850,681 to Yamanobe et al. (Yamanobe).***

This rejection is traversed at least for the following reasons.

**Luecke** - The Final Office Action contends that Luecke teaches the presence of a liquid crystal layer 78 (Final Office Action at page 2).

The Final Office Action contends that Luecke teaches the presence of substrates 70, 72 and a pair of electrodes (Final Office Action at page 2). In this regard, Luecke arguably teaches the presence of electrodes 80 and 82 (Luecke at Figure 3, column 4, line 26).

Within the claims, said pair of electrodes are formed in planar shapes parallel to each other. As explained within the specification for the instant application, since the two electrodes 130 and 140 are planar and parallel to each other, the electric field strength applied to the liquid crystal layer 120 is uniform (Specification at page 13, lines 28-31).

However, the Final Office Action *admits* that Luecke fails to disclose, teach, or suggest the electrodes 80 and 82 being formed in planar shapes *parallel to each other* (Final Office Action at page 3, Luecke at Figure 3).

Luecke is also *silent* as to a phase distribution of transmitted light. Thus, Luecke is *silent* as to the liquid crystal layer 78 being adapted to control *a phase distribution of transmitted light*.

Moreover, Luecke fails to disclose, teach, or suggest an uneven shape *corresponding* to *a desired phase distribution*.

Furthermore, Luecke is *silent* as to comma aberration of a wavefront.

The Final Office Action contends that it was well-known to form planar electrodes and use a separate layer for form [sic] uneven surfaces in order to provide an even electric field throughout the cell and simplify manufacturing (Final Office Action at pages 2-3).

In response to this contention, "allegations concerning specific 'knowledge' of the prior art, which might be peculiar to a particular art should also be supported and the appellant similarly given the opportunity to make a challenge." (Citations omitted). *In re Pardo and Landau*, 684 F.2d 912, 916, 214 USPQ 673, 677 (CCPA 1982).

Moreover, the procedures established by Title 37 of the Code of Federal Regulations expressly entitle the Applicant to an Examiner's affidavit upon request. Specifically, "when a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons." 37 C.F.R. §1.104(d) (2).

*Accordingly, **Applicant hereby requests a reference or an Examiner's affidavit** to support this officially noticed position of obviousness or what is well known.*

*Further note that if this reference or Examiner's affidavit is not provided, the assertions of what is well known **must** be withdrawn.* See M.P.E.P. §2144.03.

Also note that the failure to provide any objective evidence to support the challenged use of Official Notice constitutes clear and reversible error. *Ex parte Natale*, 11 USPQ2d 1222, 1227-1228 (Bd. Pat. App. & Int. 1989).

**Yamanobe** - Yamanobe arguably teaches the presence of a phase-type diffraction grating 2, electrodes 3, and substrates 4 (Yamanobe at Figures 1, 4A, 4B).

However, Yamanobe is silent as to the uneven shape of the diffraction grating 2 as corresponding to the spherical aberration and the comma aberration of a wavefront.

**Motivation to combine** - The Final Office Action *admits* that Luecke fails to disclose, teach, or suggest the electrodes 80 and 82 being formed in planar shapes *parallel to each other* (Final Office Action at page 3, Luecke at Figure 3). Thus, the Final Office Action fails to show that the skilled artisan would have been motivated to look to the teachings of Yamanobe modify Luecke,

**Conclusion**

The claims are considered allowable for the same reasons discussed above, as well as for the additional features they recite. Reversal of the Examiner's decision is respectfully requested.

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

Dated: September 6, 2006

Respectfully submitted,

By_____
Ronald P. Kananen
Registration No.: 24,104
RADER, FISHMAN & GRAUER PLLC
Correspondence Customer Number: 23353
Attorney for Applicant

## CLAIMS APPENDIX

1. (Previously presented) A liquid crystal device characterized by including:

a liquid crystal layer which controls a phase distribution of transmitted light;

a pair of substrates which sandwich and seal said liquid crystal layer therebetween; and

a pair of electrodes which are respectively disposed at inner sides of said substrates to apply a predetermined voltage to said liquid crystal layer, and characterized in that:

an uneven portion for giving a distribution to a thickness of said liquid crystal layer is provided inwardly of said substrates, and

said pair of electrodes are formed in planar shapes parallel to each other, wherein

said uneven portion is an uneven shape, said uneven shape corresponding to a desired phase distribution; and

said uneven shape of said uneven portion corresponds to the spherical aberration and the comma aberration of a wavefront.

2. (Original) A liquid crystal device according to claim 1, characterized in that said uneven portion is formed of a molded synthetic resin disposed between said liquid crystal layer and said electrodes.

3. (Original) A liquid crystal device according to claim 2, characterized in that said molded synthetic resin is made of an ultraviolet-curable resin.

4. (Original) A liquid crystal device according to claim 1, characterized in that said uneven portion is formed of a dielectric layer deposited on a liquid-crystal-side surface of said electrodes.

5. (Original) A liquid crystal device according to claim 1, characterized in that said uneven portion is provided on only one of said pair of substrates.

6. (Previously presented) An optical pickup characterized by having an objective lens disposed to face a recording medium, a laser light source which supplies laser light to said objective lens, and a liquid crystal device which is disposed in an optical path leading from said laser light source to said objective lens and controls a phase distribution of transmitted light, and characterized in that:

said liquid crystal device includes:

a liquid crystal layer which controls the phase distribution of the light being transmitted;

a pair of substrates which sandwich and seal said liquid crystal layer therebetween;

a pair of electrodes which are respectively disposed at inner sides of said substrates to apply a predetermined voltage to said liquid crystal layer; and

an uneven portion for giving a distribution to a thickness of said liquid crystal layer provided inwardly of said substrates, wherein

said pair of electrodes are formed in planar shapes parallel to each other;

said uneven portion is an uneven shape, said uneven shape corresponding to a desired phase distribution; and

said uneven shape of said uneven portion corresponds to the spherical aberration and the comma aberration of a wavefront.

7. (Previously presented) A manufacturing method for a liquid crystal device which includes:

a liquid crystal layer which controls a phase distribution of transmitted light;

a pair of substrates which sandwich and seal said liquid crystal layer therebetween; and

a pair of electrodes which are respectively disposed at inner sides of said substrates to apply a predetermined voltage to said liquid crystal layer,

said method characterized by comprising:

a step of providing an uneven portion for giving a distribution to a thickness of said liquid crystal layer inwardly of said substrates; and

a step of forming said pair of electrodes into planar shapes parallel to each other, wherein

said uneven portion is formed in an uneven shape, said uneven shape corresponding to a desired phase distribution; and

said uneven shape of said uneven portion corresponds to the spherical aberration and the comma aberration of a wavefront.

8. (Original) A manufacturing method for said liquid crystal device according to claim 7, characterized in that in said step of providing said uneven portion, a molded synthetic resin having said uneven portion is provided between said liquid crystal layer and said electrodes by a shape transfer method using a mold.

9. (Original) A manufacturing method for said liquid crystal device according to claim 8, characterized in that said molded synthetic resin is made of an ultraviolet-curable resin and is cured by irradiation with ultraviolet rays.

10. (Original) A manufacturing method for said liquid crystal device according to claim 7, characterized in that in said step of providing said uneven portion, a dielectric layer is provided on a liquid-crystal-side surface of said electrodes by patterning using a photomask.

## EVIDENCE APPENDIX

There is no other evidence which will directly affect or have a bearing on the Board's decision in this appeal.

## RELATED PROCEEDINGS APPENDIX

There are no other appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.